



(19) **United States**

(12) **Patent Application Publication**
Argo

(10) **Pub. No.: US 2024/0027228 A1**

(43) **Pub. Date:**
Jan. 25, 2024

(54) **SYSTEM AND METHOD OF PUBLISHING AI MAP DATA TO AN END USER BASED ON LOCATION DATA**

Publication Classification

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(51) **Int. Cl.**
G01C 21/00 (2006.01)
G06F 16/29 (2006.01)

(52) **U.S. Cl.**
CPC **G01C 21/3896** (2020.08); **G01C 21/3889** (2020.08); **G06F 16/29** (2019.01); **H04L 67/52** (2022.05)

(21) Appl. No.: **18/478,088**

(22) Filed: **Sep. 29, 2023**

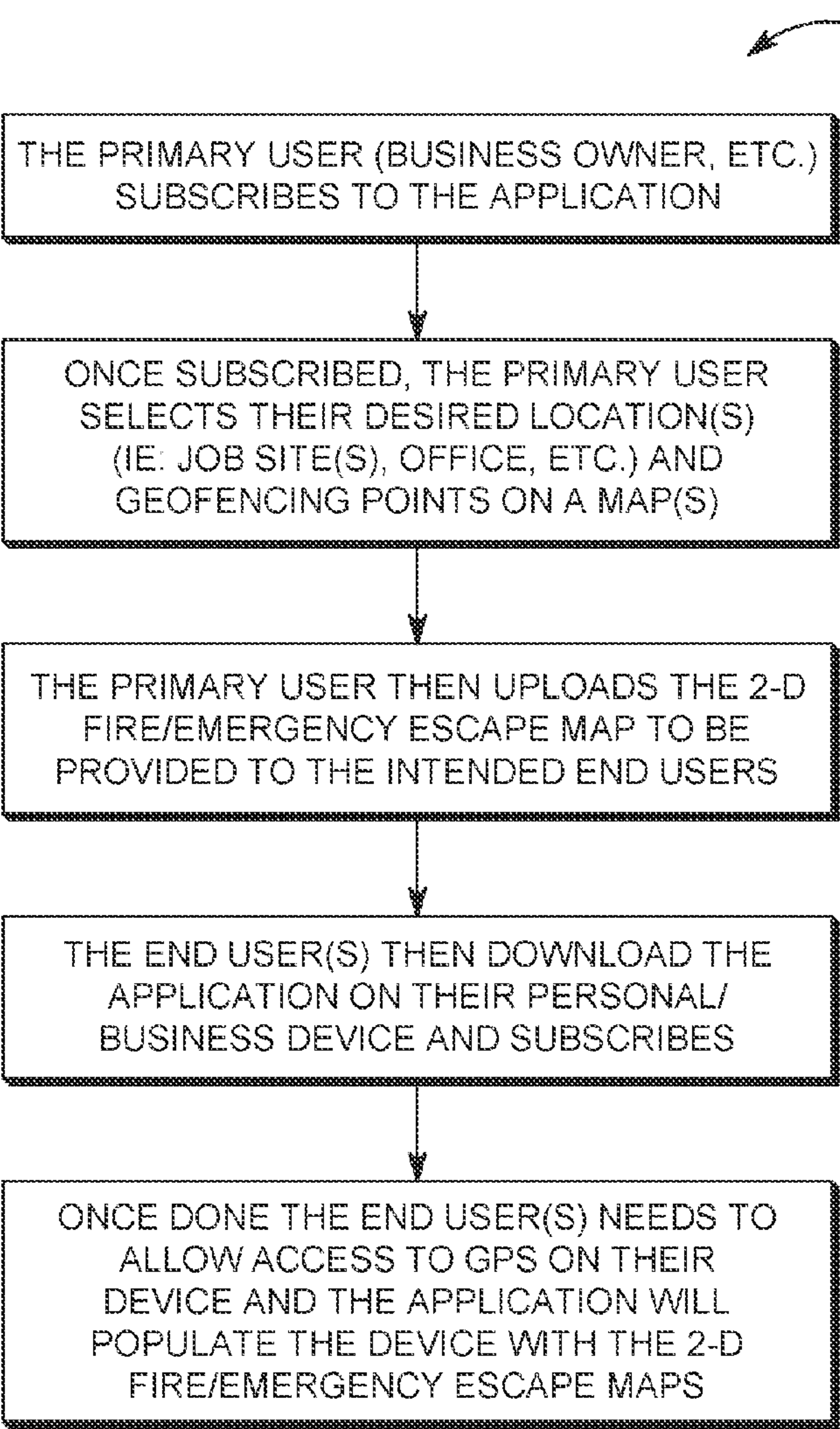
Related U.S. Application Data

(63) Continuation-in-part of application No. 17/806,325, filed on Jun. 10, 2022, now Pat. No. 11,774,265, which is a continuation-in-part of application No. 16/454,227, filed on Jun. 27, 2019, now Pat. No. 11,375,335.

(60) Provisional application No. 62/838,402, filed on Apr. 25, 2019.

(57) **ABSTRACT**

A system and method for publishing AI map data to an end user at a specified location includes a computing device. The computing device displays a map portion of an area on a digital display. The computing device receives at least one selection by a primary user for a portion of the area represented by the map, creating at least one geofence, and the computing device may attach digital media to the at least one first geofence by the primary user. The map data is retrievable from a mobile computing device of an end user when the mobile computing device is within a location corresponding to the at least one geofence.



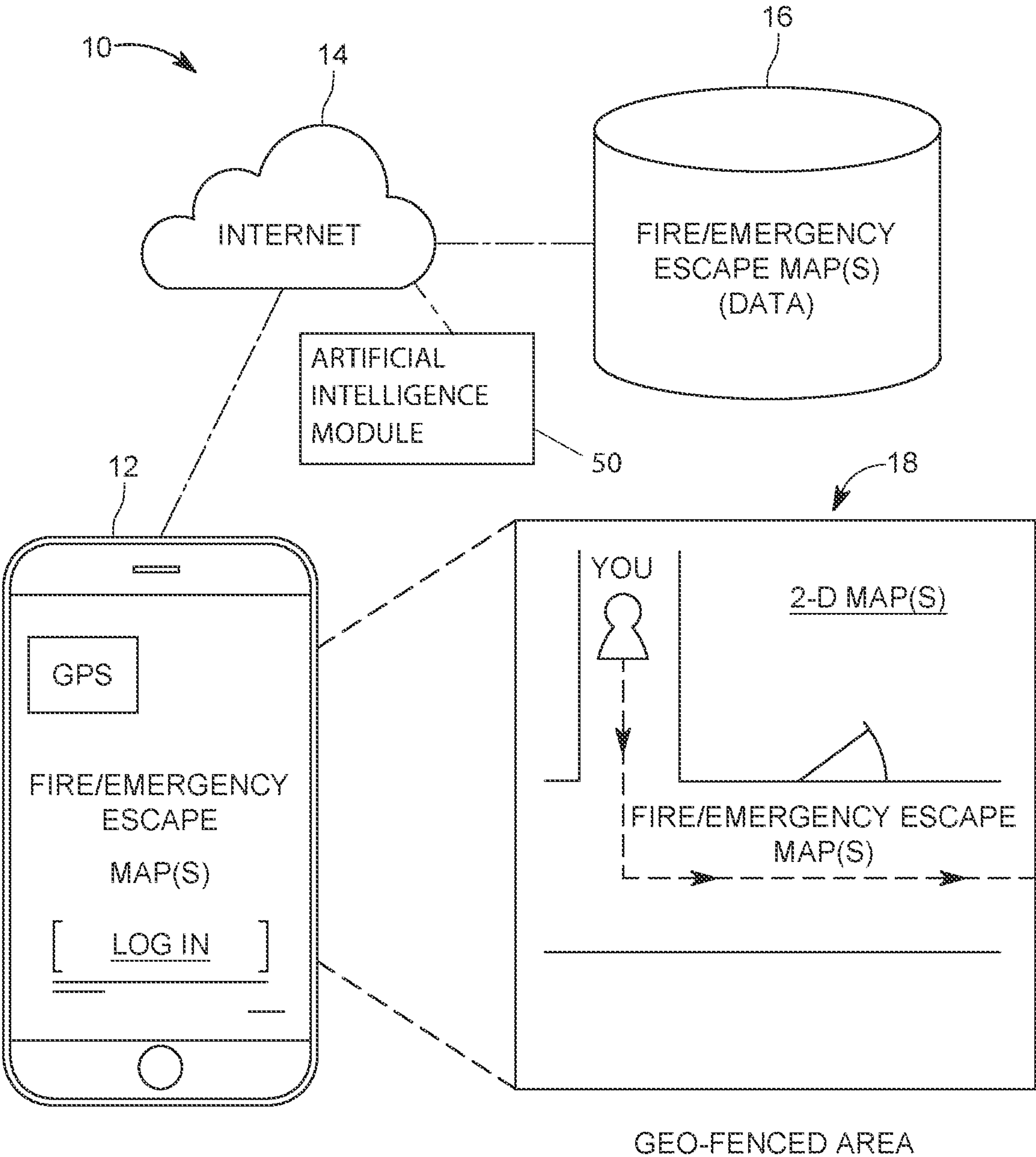


FIG. 1

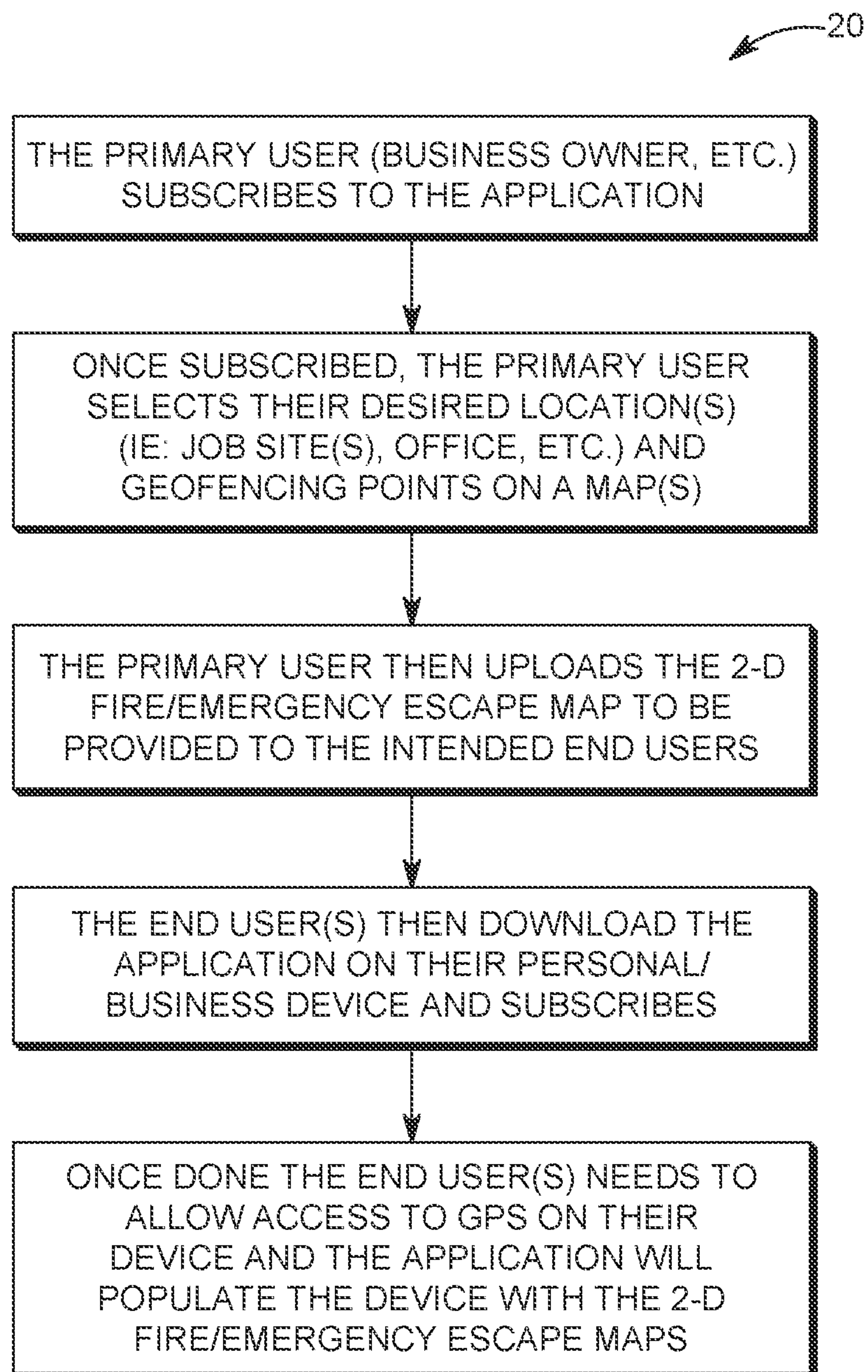


FIG. 2

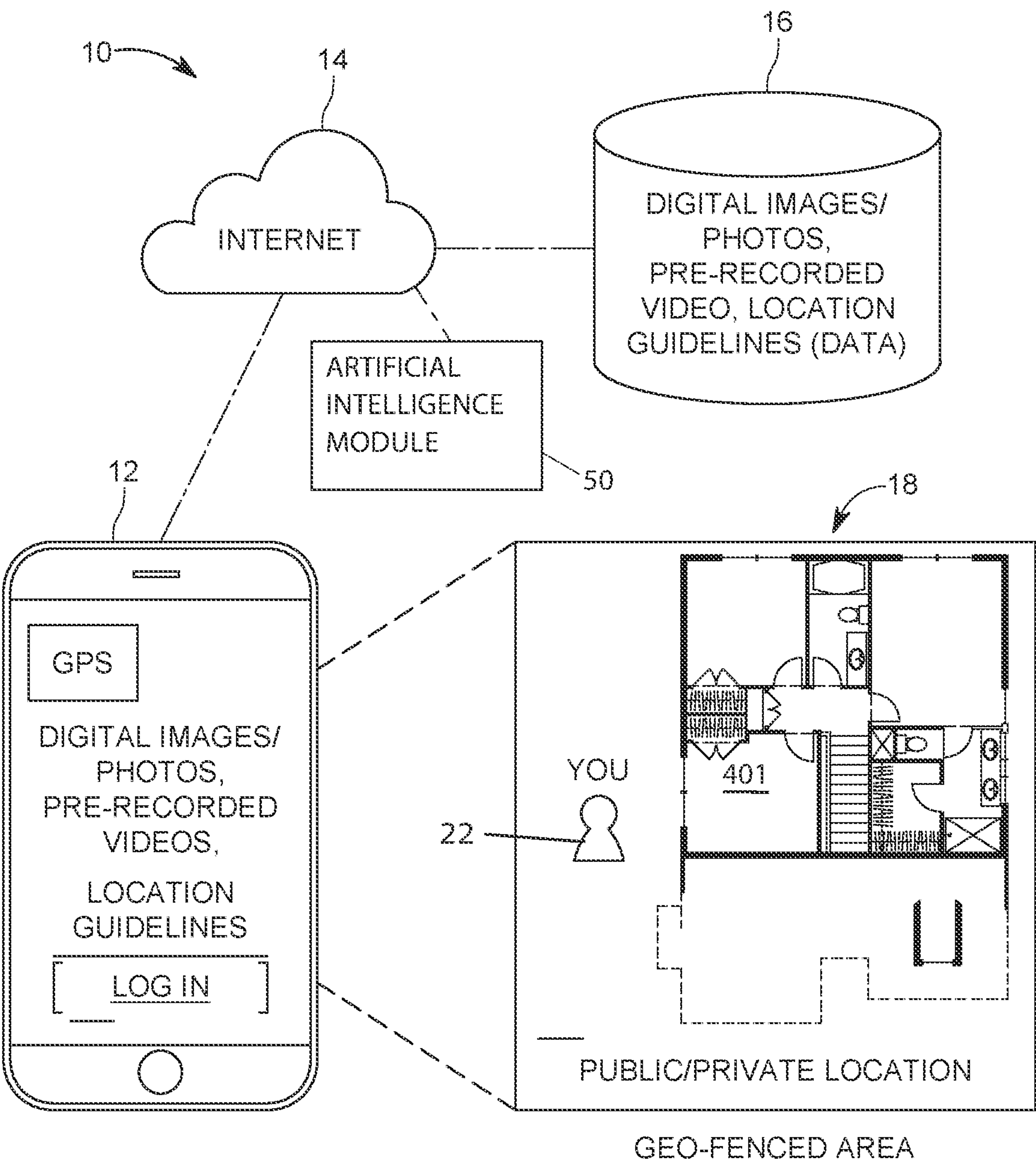


FIG. 3

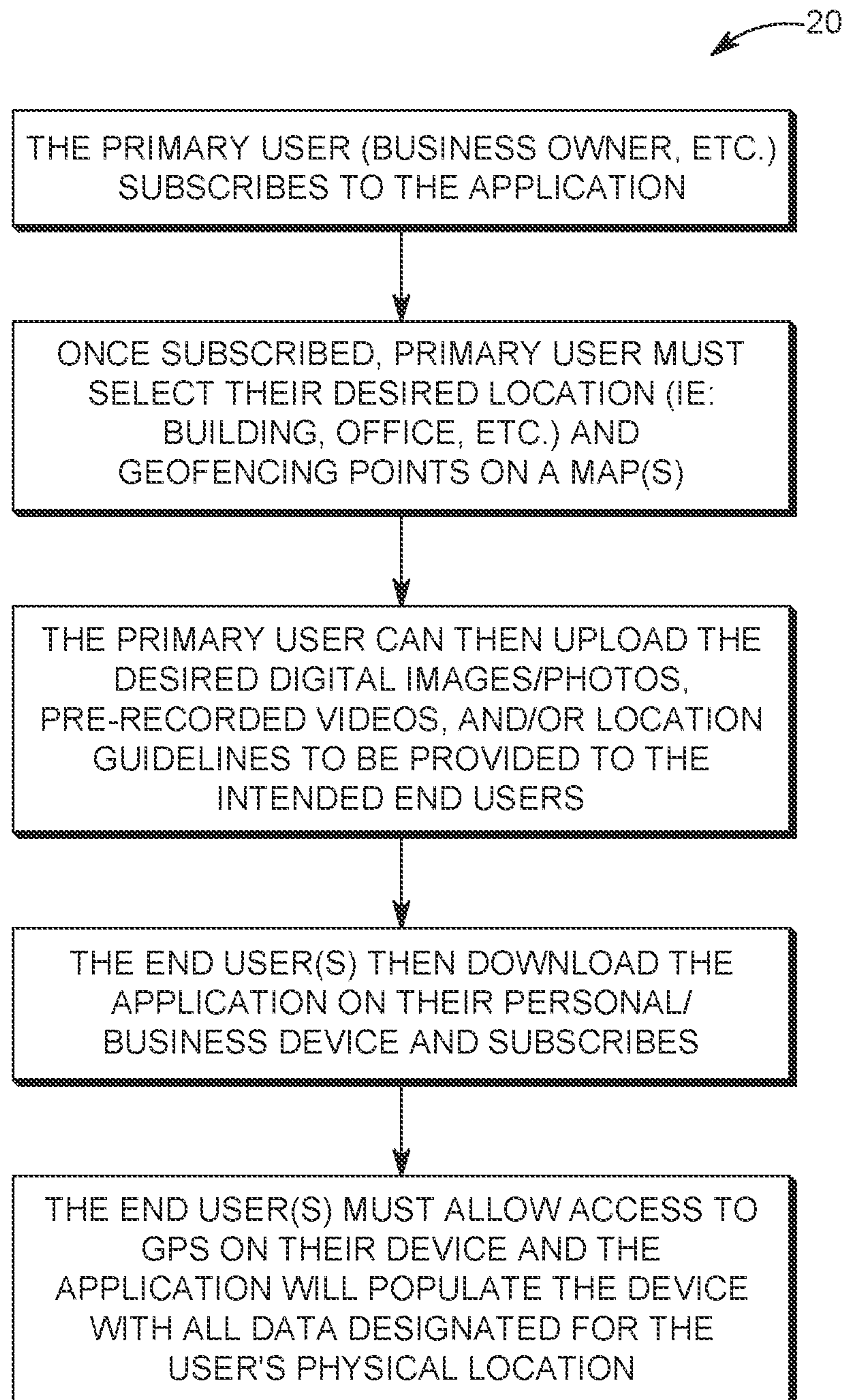


FIG. 4

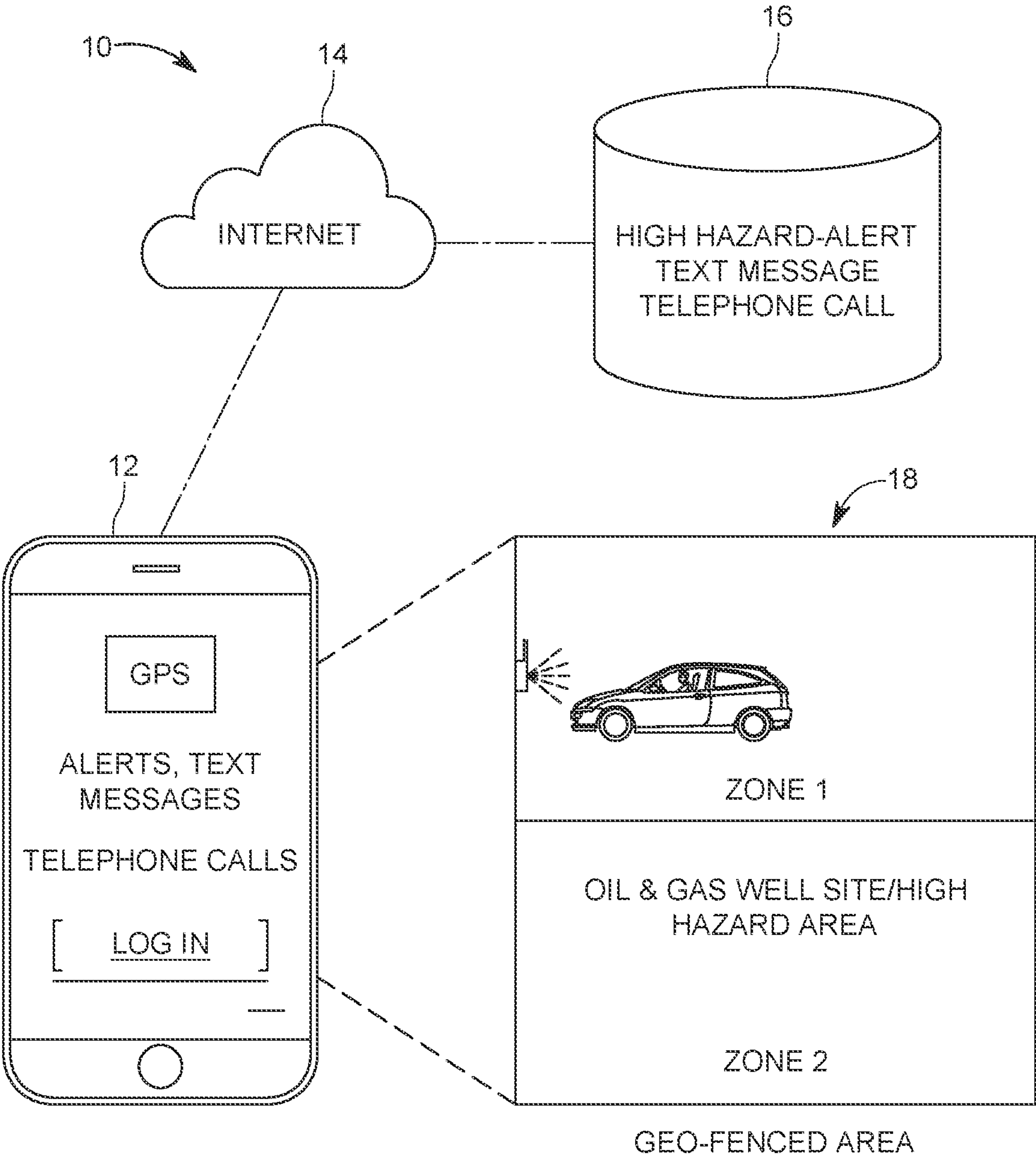


FIG. 5

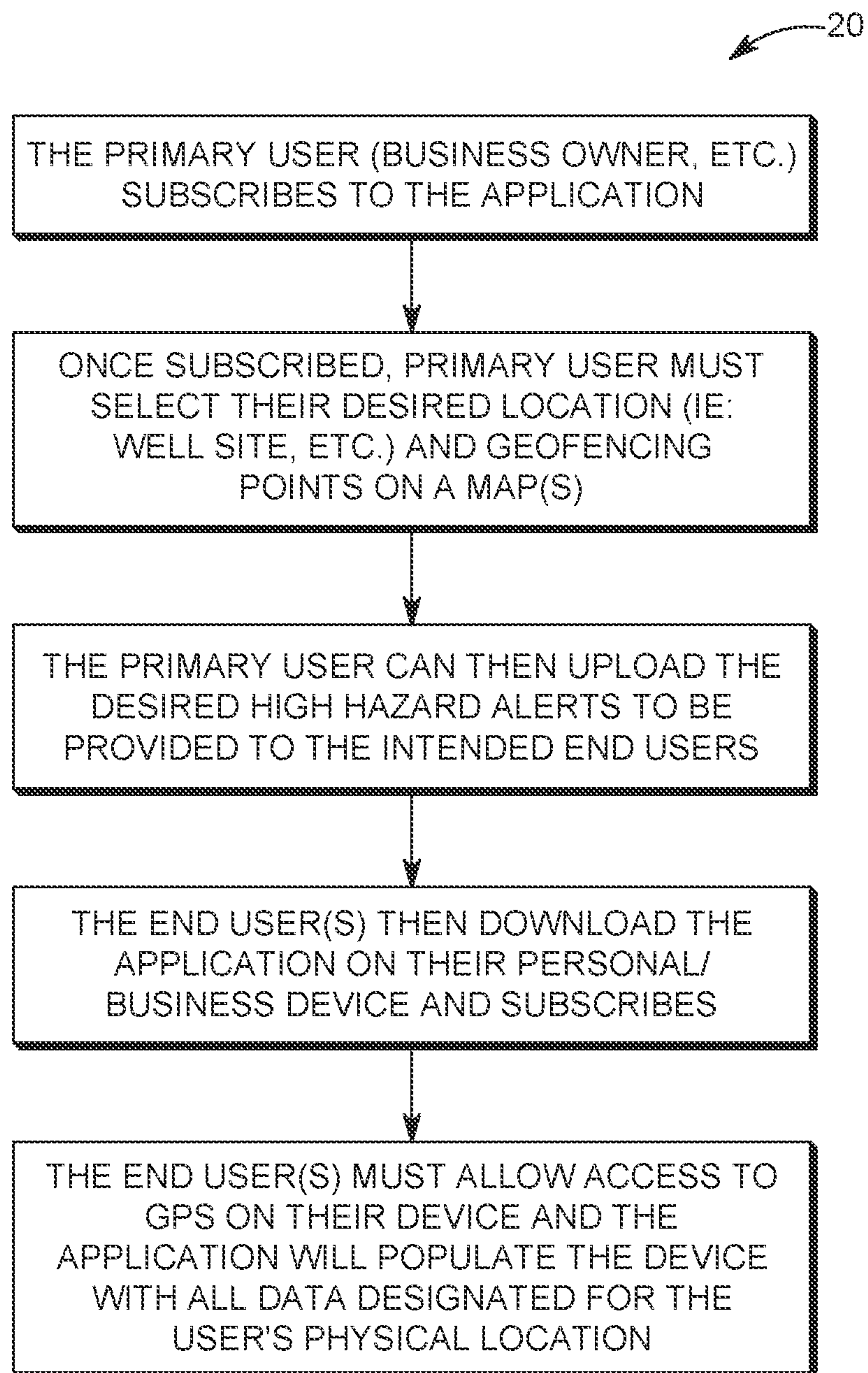


FIG. 6

SYSTEM AND METHOD OF PUBLISHING AI MAP DATA TO AN END USER BASED ON LOCATION DATA

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of priority of (a) U.S. provisional application No. 62/838,402, filed Apr. 25, 2019, (b) non-provisional Ser. No. 16/454,227, filed Jun. 27, 2019, and (c) non-provisional Ser. No. 17/806,325, filed Jun. 10, 2022, the contents of each are herein incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] The present invention relates to document publishing and retrieval and, more particularly, to a system and method of retrieving documents and other digital media based on an end user's location data.

[0003] Important documents and digital media may need to be accessed by employees within a workplace. Currently, the documents and digital media have to be sent by e-mail, text, or provided in hard copy. The current methods are cumbersome for the sender and end users may lose or delete the documents. Additionally, current methods require a sender to know when someone is in need of the required documents or other digital media.

[0004] As can be seen, there is a need for a system and method of retrieving documents and other digital media based on an end user's location data.

SUMMARY OF THE INVENTION

[0005] In one aspect of the present invention, a method of publishing map data to an end user at a specified location, the method including the following: displaying, via software running on a computing device, a map for an area; receiving, via software running on a computing device, at least one selection by a primary user for a portion of the area represented by the map, creating at least one geofence; and attaching, prior to an emergency, via software running on the computing device, pre-planned map data to each geofence by the primary user, wherein the pre-planned map data is retrievable from a mobile computing device of an end user immediately upon the mobile computing device being within a location corresponding to the geofence attached to said pre-planned map data, wherein receiving a selection comprises receiving a series of point selections on the map from the primary user and determining a polygon having vertices corresponding to the point selections, wherein the mobile computing device is verified by the end user logging into an application loaded on a memory of the mobile computing device, wherein a global positioning system of the mobile computing device determines if the mobile computing device is within the at least one geofence, wherein the at least one selection is a plurality of selections creating a plurality of geofences, wherein the end user attaches different pre-planned map data to each of the plurality of geofences; wherein the pre-planned map data includes a pre-planned escape route map display, wherein the pre-planned escape route map display comprises an interactive map presenting an end user location indicator at the retrieved location of the mobile computing device, wherein the interactive map provides a representation of a route to a safe zone specified for the area, wherein the area

is at least one of the following: a building, a structure, and a place of assembly, wherein the interactive map communicates with a fire alarm system of the area for determining an updated escape route for each user via the mobile application, and wherein the interactive map communicates with an emergency personnel application loaded on a client computing device, wherein the client computing device is configured to monitor the interactive map and its end user location indicator; wherein the pre-planned map data comprises one or more pre-planned alerts, wherein each pre-planned alert is determined by the primary user via the computing device, wherein each pre-planned alert comprises at least one of the following: a pre-planned push notification, a pre-planned text message, and a pre-planned telephone call; and/or, wherein the pre-planned map data comprises at least one of the following: a pre-planned digital image, a pre-planned digital photo, a pre-planned location guideline, and a pre-recorded video.

[0006] In another aspect of the present invention, a system for publishing map data to an end user at a specified location, the system including the following: at least one processor; at least one memory; at least one communication interface for communicating over a network; and a plurality of program instructions stored in the at least one memory that, when executed by the at least one processor, cause the at least one processor to: display a map for an area; receive at least one selection by a primary user for a portion of the area represented by the map, creating at least one geofence; and attaching prior to an emergency pre-planned map data for each geofence by the primary user, wherein each pre-planned map data is retrievable from a mobile computing device of an end user immediately upon the mobile computing device being within a location corresponding to the at least one geofence.

[0007] In another aspect of the present invention, a method for publishing map data to an end user at a specified location comprising steps of: displaying, via software running on a computing device, a map for an area; receiving, via software running on a computing device, at least one selection by a primary user for a portion of the area represented by the map, creating at least one geofence; and attaching, prior to a mobile computing device of an end user entering the area, via software running on the computing device, pre-planned map data to each geofence by the primary user, wherein each pre-planned map data is retrievable from said mobile computing device immediately upon the mobile computing device being within a location corresponding to the at least one geofence.

[0008] In another aspect of the present invention method for publishing map data to an end user at a specified location, the method includes the following: displaying, via software running on a computing device, a map for an area; receiving, via software running on the computing device, at least one selection by a primary user for a portion of the area represented by the map, creating at least one geofence; and attaching, prior to an emergency, via software running on the computing device, pre-planned map data to each geofence by the primary user, wherein the pre-planned map data is retrievable from the computing device by way of an artificial intelligence module through identifying one of the at least one geofence displayed on the map, wherein the artificial intelligence module is queried by text or voice prompt, wherein the artificial intelligence module is configured to analyze only the pre-planned map data, wherein access to

the pre-planned map data is based on a security access associated with the computing device, and wherein a mobile computing device of an end user accesses the artificial intelligence module immediately upon the mobile computing device being within a location corresponding to the geofence attached to said pre-planned map data.

[0009] These and other features, aspects and advantages of the present invention will become better understood with reference to the following drawings, description, and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 is a schematic view of an embodiment of the present invention.

[0011] FIG. 2 is a flowchart of an embodiment of a method of the present invention.

[0012] FIG. 3 is a schematic view of an embodiment of the present invention; and

[0013] FIG. 4 is a flowchart of an embodiment of a method of the present invention.

[0014] FIG. 5 is a schematic view of an embodiment of the present invention; and

[0015] FIG. 6 is a flowchart of an embodiment of a method of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0016] The following detailed description is of the best currently contemplated modes of carrying out exemplary embodiments of the invention. The description is not to be taken in a limiting sense but is made merely for the purpose of illustrating the general principles of the invention, since the scope of the invention is best defined by the appended claims.

[0017] The present invention includes a system of geofencing that provides emergency action plan documents and other digital media to a receiver based on GPS or cellular triangulation. The present invention provides on demand information by location to anyone in the pre-selected geofenced area.

[0018] Referring to FIGS. 1 through 6, the present invention includes a system and method 10 for publishing digital media to an end user at a specified location. The system and method 10 may be performed on a computing device 12 including at least one processor, at least one memory, at least one communication interface for communicating over a network 14, and a plurality of program instructions stored in the at least one memory that, when executed by the at least one processor, cause the at least one processor to perform steps. The computing device 12 may display a map portion of a geographic region on a digital display. The computing device may further receive at least one selection by a primary user for a portion of the geographic region represented by the map, creating at least one geofence, and the computing device 12 may attach digital media retrievable stored in a database 16 to the at least one first geofence by the primary user. The digital media retrievable stored in a database 16 is retrievable from a mobile computing device 12 of an end user when the mobile computing device 12 is within a geographic location corresponding to the at least one geofence.

[0019] The computing devices 12 may include, but are not limited to, laptops, desktops, or smart devices, such as smart phones and tablets. Each of the computing devices 12

include at least the processor and the memory. The computing devices 12 may execute on any suitable operating system such as IBM's zSeries/Operating System (z/OS), MS-DOS, PC-DOS, MAC-iOS, WINDOWS, UNIX, OpenVMS, ANDROID, an operating system based on LINUX, or any other appropriate operating system, including future operating systems.

[0020] In particular embodiments, the computing devices 12 include a processor, memory, a user interface, and a communication interface. In particular embodiments, the processor includes hardware for executing instructions, such as those making up the software program. The memory includes main memory for storing instructions such as software program(s) for the processor to execute, or data for processor to operate on. The memory may include an HDD, a floppy disk drive, flash memory, an optical disc, a magneto-optical disc, magnetic tape, a Universal Serial Bus (USB) drive, a solid-state drive (SSD), or a combination of two or more of these. The memory may include removable or non-removable (or fixed) media, where appropriate. The memory may be internal or external to the computing devices 12, where appropriate. In particular embodiments, the memory is non-volatile, solid-state memory.

[0021] The user interface includes hardware, software, or both providing one or more interfaces for user communication with the computing devices 12. As an example, and not by way of limitation, the user interface may include a keyboard, keypad, microphone, monitor, mouse, printer, scanner, speaker, still camera, stylus, tablet, touchscreen, trackball, video camera, another user interface, or a combination of two or more of these.

[0022] The communication interface includes hardware, software, or both providing one or more interfaces for communication (e.g., packet-based communication) between the computing devices 12 on one or more networks. As an example, and not by way of limitation, the computing devices 12 may include a communication interface including a network interface card (NIC) or network adapter for communicating with an Ethernet or other wire-based network or a wireless NIC (WNIC) or wireless adapter for communicating with a wireless network, such as a WI-FI network. This disclosure contemplates any suitable network and any suitable communication interface. As an example, and not by way of limitation, the computing devices 12 may communicate via an ad hoc network, a personal area network (PAN), a local area network (LAN), a wide area network (WAN), a metropolitan area network (MAN), or one or more portions of the Internet or a combination of two or more of these. One or more portions of one or more of these networks may be wired or wireless. As an example, computing devices 12 may communicate with a wireless PAN (WPAN) (e.g., a BLUETOOTH WPAN), a WI-FI network, a WI-MAX network, a cellular telephone network (e.g., a Global System for Mobile Communications (GSM) network), or other suitable wireless network or a combination of two or more of these. The computing devices 12 may include any suitable communication interface for any of these networks, where appropriate.

[0023] As mentioned above, the primary user may select a series of points to create the geofence. The present invention includes a selection system for specifying a geo-location. Particularly, the primary user can locate a desired location in a browser using, for example, a map application

such as Google Maps®. The user can then click a variety of points to define a polygon (or expand a rectangle, circle, etc.).

[0024] The user can identify a region of interest by zooming into a region of the map (for example, by scrolling a mouse wheel) or selecting icons. The user can also enter an address in a box, and the map may automatically center and/or zoom to that address. By selecting a generate geolocation icon, the system allows the user to create the geofence. The user can indicate a plurality of points to define the boundaries of the geofence. The geofence may be made as a polygon, circles, rectangles, and other predefined shapes can also be used for order specification.

[0025] For example, the primary user can select a first point on the map. Following the first point selection, the system can depict, via a dotted line or other indicator, the resulting edge that would be created were the user to again select another position on the map. The primary user selects a second position. The primary user again moves the cursor to another point and a dotted line indicates the potentially resultant edge. A third point is selected. The system can then fill in the resulting triangular region to provide the primary user with an indication of the area within the geofence. The user can continue to create additional polygonal points, or the user can select the initially generated point to complete the geofence. A confirmatory popup can be presented allowing the primary user to name the geofence for future reference, or to delete the geofence. In certain embodiments, the at least one selection is a plurality of selections creating a plurality of geofences. The primary user may attach different map to each of the plurality of geofences.

[0026] As mentioned above, the primary user can attach map data retrievable stored in a database **16** to the specified geofencing. In such embodiments, the database **16** may be stored on the computing device or a remote server, such as a cloud-based server. The computing system **12** may allow the primary user to log into an account of the present invention using credentials. The primary user may then create the geofence as described above, and then drag and drop the map data retrievable stored in a database **16** into the geofence. The linked geofence and database **16** is then saved to a remote server, which may be disseminated over the internet **14** to those end users that enter the geographic location corresponding to the geofence.

[0027] The end user of the present invention may be verified by logging into an account of the present invention using credentials. In certain embodiments, the present invention may include an application loaded on a memory of the mobile computing device **12**. The end user may open the application and log into the application. When the end user enters the geographic location, the application may use the global positioning system of the mobile computing device **12** or may calculate the location of the mobile computing device **12** using cellular towers. Once the application verifies that the user is within the geographic location, the end user may access the database **16**.

[0028] A person uses the present invention to get on demand specific information that may be required for emergency and non-emergency situations simply based on their physical location. The present invention may further provide time keeping data, end users exact location, video/audio recording of emergency situations of end user, automatic emergency help requests and data pushes to unlimited numbers of users. The present invention could be used to send

information based on the user's physical location and can be used to receive information based on the user's physical location.

[0029] The present invention may include pre-planned escape route map(s) that become an interactive map created by two-dimensional (2D) or three-dimensional (3D) data collected and incorporated into the software that shows the location of the end-user on the interactive map. The software, via the interactive map, guides the user out of the building, structure, and/or location to a designated assembly or safe zone specified for that particular building, structure, and/or location.

[0030] The interactive map may communicate with a buildings' fire alarm system via a communication link from the fire alarm system's hardware devices and software and/or from the fire alarm system provider. This communication link can relay the area of the smoke, heat, and/or fire detected location within a building, structure, or location and relay that information to the present software to be incorporated into the predetermined interactive map. Using this communication, the software can determine the specific escape route for each user on the predetermined building, structure, or location map(s) via the mobile application. The user is guided to one of several predetermined assembly or safe zones. Local Area Networks (LAN) may be incorporated to provide primary or secondary communication for the software to communicate to the user mobile devices and the software stored data.

[0031] A two-dimensional interactive map rendering of the building, structure, or location uploaded to a computing device, wherein the systemic software is configured to render or display a map of the location, structure, and/or building is created. This rendered escape map is then placed at the location using geofencing technology.

[0032] The location of all users within the two-dimensional (2D) or three-dimensional (3D) rendered map can be monitored live via the software allowing communication to emergency personnel of people's specific location within the location, structure, and or building and people's arrival to the predesignated assembly or safe zone. This information assists emergency personnel in determining appropriate response and rescue of people.

[0033] The present invention may be configured so that pre-planned alerts can be sent to users once they enter a geofenced area. These alerts are determined by the administrator and can be established in high hazard/high danger areas to alert users entering these areas of the known dangers associated with the specific location. Alerts can be by push notification, text messaging, telephone calls, or a combination of all. Example: Oil and Gas worker enters a high hazard/high danger well site with H₂S gas. Once the worker crosses the nearest geofenced barrier, the worker will receive one or more alerts notifying the worker he is entering a high hazard/high danger H₂S zone and is directed to follow established protocols before continuing into the area, as illustrated in FIGS. **5** and **6**.

[0034] The present invention may be configured so that pre-planned digital images/photos, location guidelines, and pre-recorded videos can be published within a geofenced area providing informative content specific to the geofenced location(s).

[0035] Thereby the present invention provides map data including alerts, interactive escape routes, and other information to occupants in the building during emergency

situations and non-emergency situations. The map data may include indications of the locations of the occupants within an indoor or outdoor map of the building, a representation of a route to a safe exit from the building, a representation of a recommended entrance to the building for an emergency responder to enter, etc.

[0036] The map data may also include outdoor map data including a 2D or 3D model of the exterior of the building, and a layout of the building premises. Additionally, the information may include indoor map data including floor layouts of one or several floors of the building with indications of the different areas of the building, such as classrooms, hallways, assembly space etc., and indications of the entrances and/or exits to and/or from the building.

[0037] The cloud-based server **14** may generate the indoor and outdoor map views based on map data from a map database. The cloud-based server **14** may generate a 2D or 3D model based on map data from the user's current location from a map database **16** to generate map data for display **18** on the mobile computing device **12**. The cloud-based server **14** may receive map data and provides the map data to the mobile computing device **12** which then renders the map display **18** based on the map data. For example, the indoor map data may include location information for the location of an occupant, and the mobile computing device **12** may present an occupant location indicator **22** at the retrieved/published location.

[0038] The map data may include a floor layout indicating each area of the floor, such as rooms, hallways, places of assembly, etc. For buildings with multiple floors, the indoor map data may include several floor layouts with a user control for selecting one of the floors to display or may include several floor layouts presented in the same display. The map data may also indicate each of the exits from the building or stairwells and exits from each of the rooms, as illustrated in FIG. 3, wherein the map display may include indications **22** of the precise locations of each occupant within a particular zone. The map data information may also include outdoor map data including a 2D or 3D model of the exterior of the building, and a layout of an area premises.

[0039] The present invention may include an emergency personnel application that presents similar information but is associated with emergency personnel. Accordingly, emergency personnel may get an alert notifying the emergency personnel that a dangerous situation has been detected, and the map data including floor layouts, an indication of the location of the safety zone, and indications of the number of occupants in each area of the building and precise locations of each occupant within a particular area. In this manner, the emergency responder may be made aware of the occupants that need immediate assistance.

[0040] The emergency responder application may be executed on the client computing devices **12** of emergency personnel, such as police officers, firefighters, paramedics, etc. In another example, the emergency responder application may execute on a client computing device **12** of a police dispatcher, such as a mobile smart device, laptop or desktop computer, and the police dispatcher may provide the information from the emergency responder application to police officers assigned to the area.

[0041] In another embodiment, the present invention is enabled with Artificial Intelligence (AI) and its many comprising components such as Deep Learning, Machine Learning, Transformer Models, Large Language Models, and AI

Systems including but not limited to Computer Vision, Speech Recognition, Customer Service, and Recommendation Engines will process and analyze the published data (digital media documents, digital images, videos, and other known digital media) in each geofenced area. This analysis shall include the sum of all of text data, video data, image data, and any other uploaded data specific to the data stored in the server used in conjunction with the geofencing software. The data can then be queried by text and voice prompts. The software will support neural networks of Deep Learning, Transformer Models, and Large Language Models to learn and interpret the server data to interact with users.

[0042] Data can be layered by security access. Occupants of a location(s) are provided access to "need-to-know" data established by the location administrator(s).

Examples of Questions the Software can Answer.

[0043] What is the nearest emergency exit from room number 401?

[0044] What's the average time it will take to walk from room number 401 to the parking lot using the nearest emergency exit?

[0045] What's the average escape time from room 401 if I run?

[0046] What's a summary of the emergency action plan for the 10th story of this hotel?

[0047] What hazardous chemicals are stored at this location and what are the quantities?

[0048] If the hotel is at full occupancy, how many people are at this location?

[0049] External data from other sources which can be searched and retrieved via the internet, blue-tooth connections, tethered connections, or other data input connections will be blocked from this specific AI analysis except for language translation. The user can predetermine language preferences when using the software, and the software will analyze the data and respond in text or voice format in the preferred language, using predetermined translation software plug-ins.

[0050] Users can virtually travel to a geofenced location. The virtual travel occurs on the software's map, allowing users to select a location they want to query. The administrator of the geofenced location can allow virtual visitors access to their geofenced published data/digital media. If access is allowed, users can query the published data using text and voice prompts in the same format that users physically present in the geofenced area can query published data.

[0051] The published data is not limited in scope to emergency information but must be published before any emergency.

[0052] It should be understood, of course, that the foregoing relates to exemplary embodiments of the invention and that modifications may be made without departing from the spirit and scope of the invention as set forth in the following claims.

What is claimed is:

1. A method for publishing map data to an end user at a specified location, the method comprising:

displaying, via software running on a computing device, a map for an area;

- receiving, via software running on the computing device, at least one selection by a primary user for a portion of the area represented by the map, creating at least one geofence; and
- attaching, prior to an emergency, via software running on the computing device, pre-planned map data to each geofence by the primary user, wherein the pre-planned map data is retrievable from the computing device by way of an artificial intelligence module through identifying one of the at least one geofence displayed on the map.
2. The method of claim 1, wherein the artificial intelligence module is queried by text or voice prompt.
3. The method of claim 1, wherein the artificial intelligence module is configured to analyze only the pre-planned map data.
4. The method of claim 1, wherein access to the pre-planned map data is based on a security access associated with the computing device.
5. The method of claim 1, wherein a mobile computing device of an end user accesses the artificial intelligence module immediately upon the mobile computing device being within a location corresponding to the geofence attached to said pre-planned map data.
6. The method of claim 1, wherein receiving a selection comprises receiving a series of point selections on the map from the primary user and determining a polygon having vertices corresponding to the point selections.
7. The method of claim 1, wherein the mobile computing device is verified by the end user logging into an application loaded on a memory of the mobile computing device.
8. The method of claim 1, wherein a global positioning system of the mobile computing device determines if the mobile computing device is within the at least one geofence.
9. The method of claim 1, wherein the at least one selection is a plurality of selections creating a plurality of geofences, wherein the end user attaches different pre-planned map data to each of the plurality of geofences.
10. The method of claim 1, wherein the pre-planned map data comprises a pre-planned escape route map display.
11. The method of claim 10, wherein the pre-planned escape route map display comprises an interactive map presenting an end user location indicator at the retrieved location of the mobile computing device.
12. The method of claim 11, wherein the interactive map provides a representation of a route to a safe zone specified for the area.
13. The method of claim 1, wherein the pre-planned map data comprises one or more pre-planned alerts.
14. The method of claim 1, wherein the pre-planned map data comprises at least one of the following a pre-planned digital image, a pre-planned digital photo, a pre-planned location guideline, and a pre-recorded video.

15. A system for publishing map data to an end user at a specified location, comprising:
- at least one processor;
 - at least one memory;
 - at least one communication interface for communicating over a network; and
 - a plurality of program instructions stored in the at least one memory that, when executed by the at least one processor, cause the at least one processor to:
- display a map for an area;
 - receive at least one selection by a primary user for a portion of the area represented by the map, creating at least one geofence; and
 - attaching prior to an emergency pre-planned map data for each geofence by the primary user, wherein the pre-planned map data is retrievable from the computing device by way of an artificial intelligence module through identifying one of the at least one geofence displayed on the map.
16. The system of claim 15, wherein the pre-planned map data comprises a pre-planned escape route map display having an interactive map presenting an end user location indicator at the retrieved location of the mobile computing device, wherein the interactive map provides a representation of a route to a safe zone specified for the area.
17. The system of claim 15, wherein the artificial intelligence module is queried by text or voice prompt.
18. The method of claim 15, wherein the artificial intelligence module is configured to analyze only the pre-planned map data.
19. A method for publishing map data to an end user at a specified location comprising steps of:
- displaying, via software running on a computing device, a map for an area;
 - receiving, via software running on a computing device, at least one selection by a primary user for a portion of the area represented by the map, creating at least one geofence; and
 - attaching, prior to a mobile computing device of an end user entering the area, via software running on the computing device, pre-planned map data to each geofence by the primary user, wherein
- each pre-planned map data is retrievable from said mobile computing for each geofence by the primary user, wherein the pre-planned map data is retrievable from the computing device by way of an artificial intelligence module through identifying one of the at least one geofence displayed on the map.
20. The system of claim 19, wherein the artificial intelligence module is queried by text or voice prompt, and wherein the artificial intelligence module is configured to analyze only the pre-planned map data.

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